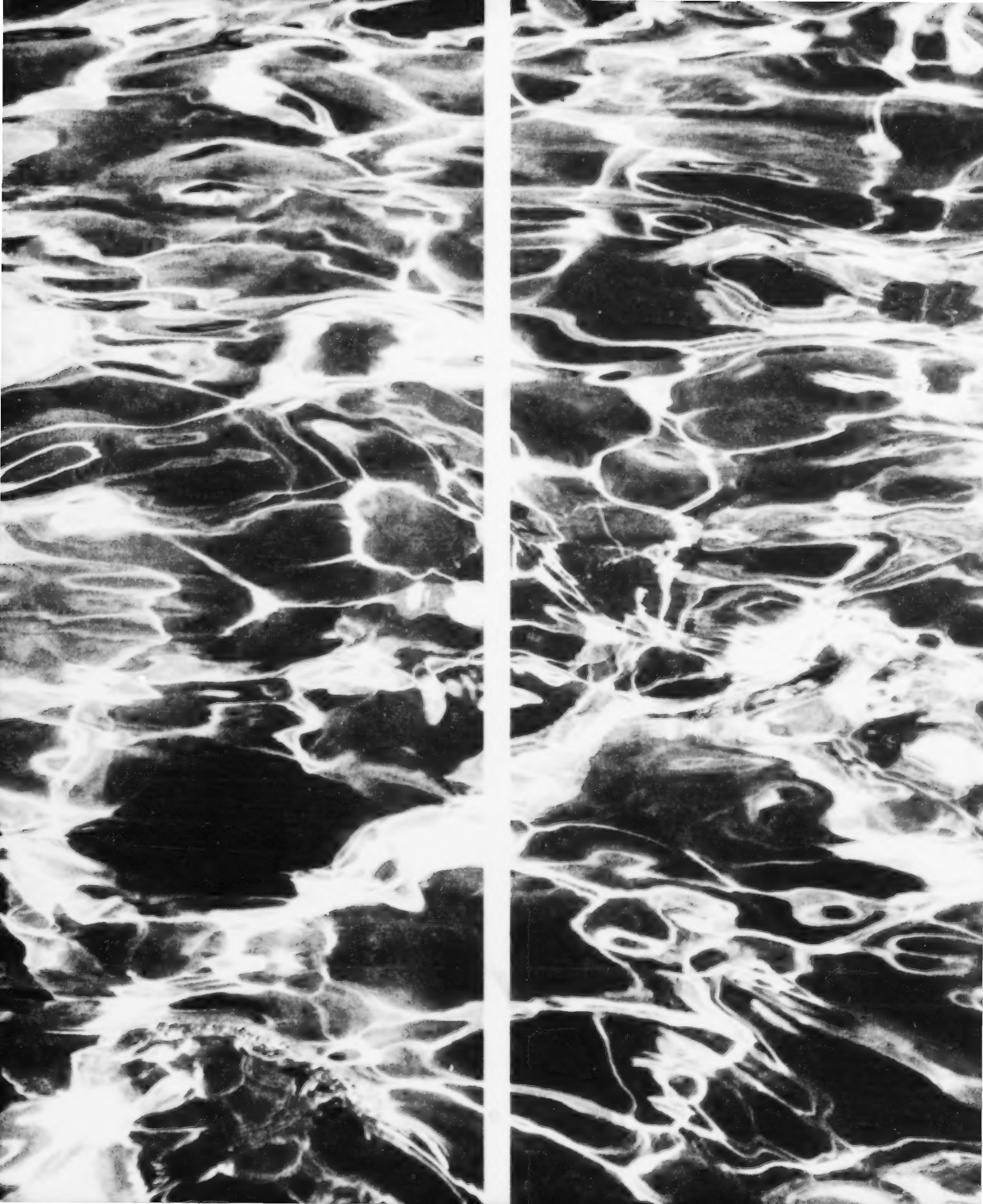
WATER CONSERVATION AND ALLOCATION POLICY

Alberta



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introduction

Reliable water supplies for a sustainable economy is one of the key goals of *Water for Life: Alberta's Strategy for Sustainability*. In response to concerns raised during public consultation of Alberta's *Water for Life* strategy in 2003, the Advisory Committee on Water Use Practice and Policy was formed to examine the use of fresh water for underground injection.

Based on recommendations from the Committee and the outcomes of Alberta's *Water for Life* strategy, the Government of Alberta worked in partnership with representatives of industry, sectoral interest groups, and non-government organizations to develop the *Water Conservation* and *Allocation Policy* for *Oilfield Injection* and the accompanying *Water Conservation and Allocation Guideline for Oilfield Injection*.

The ultimate goal of the policy and guideline is to reduce or eliminate allocation of non-saline (fresh) water for oilfield injection, while respecting the rights of current licence holders. This policy replaces the *"Groundwater Allocation Policy for Oilfield Injection Purposes"* (March 1990), providing a consistent regulatory approach to achieve change, incorporating water conservation as a requirement for oilfield injection operations.

WHAT'S INCLUDED IN THE NEW POLICY?

- The policy takes a place-based approach to water management, guiding industry working in naturally water-short areas (see map on page eight) and areas with development pressures to maximize water conservation efforts.
- New projects within water-short areas that propose to use non-saline water must demonstrate that every feasible option has been evaluated and only non-saline water resource use will prevent stranding oil resources.
- In circumstances where no feasible alternative exists, consideration should be given to delaying projects until new technology or alternative water sources are available. In all cases where new oilfield injection projects are proposed for water-short areas, environmental risks need to be carefully weighed against economic benefits of the project. If fresh water must be used, a risk-based process, performance measures and economic analysis must be considered in choosing the water source for oilfield injection.

New efforts to develop improved enhanced recovery methods and practices in the oil industry will form an important component of the overall initiative to reduce the use of fresh water for use in the oilfield sector. These efforts include industry research and development initiatives, joint industry-government research programs, and government initiatives to develop effective environmental management systems. Flexible regulatory tools and incentives will be used, where possible, to achieve water conservation improvements.

The policy and the guideline will be reviewed in 2008 to ensure the environmental outcomes are achieved.

policy statement

The objective of this Policy is to enhance the conservation and protection of Alberta's water; and to reduce or eliminate, on a case-by-case basis, the use of non-saline water resources for oilfield injection purposes.

This outcome will be achieved by adopting the recommendations of the **Advisory Committee on Water Use Practice and Policy**[1], and through implementation of this policy and the *Water Conservation and Allocation Guideline for Oilfield Injection (2006)*.

policy goals

1. Ensure reliable and good quality water supplies to support a sustainable economy, as envisioned in *Water for Life: Alberta's Strategy for Sustainability*.
2. Manage provincial water resources allocated for oilfield injection purposes in a way that achieves the purpose of Alberta's *Water Act*.
3. Implement regulatory process recommendations of the **Advisory Committee on Water Use Practice and Policy**.
4. **Achieve:**
   a. significant reductions in the total allocation of non-saline water resources for underground injection;
   b. significant reductions in the volume of non-saline water injected (by identifying conservation objectives on a case-by-case basis);
   c. increased water availability for other users and for protection of the aquatic environment.

   Meet future sectoral or river basin targets for water conservation, and productivity and efficiency targets for non-saline water use, as committed in *Water for Life: Alberta's Strategy for Sustainability*.

policy application

Effective January 2006, this Policy applies to the allocation of both non-saline groundwater and surface water resources. It applies to all *Water Act* applications and to the renewal of existing term licences.

Holders of permanent licences (issued under the *Water Resources Act*) are encouraged to cooperate with the intent of this policy and its guidelines and according to the specific conditions of their licences.

While permanent water licences are not subject to renewal, Alberta Environment will approach all holders of permanent licences to encourage them to undertake a voluntary review of their licence. Licence holders will determine where allocations can be returned to the Crown, and undertake water conservation measures to reduce water use.

1 Advisory Committee on Water Use Practice and Policy. Final Report, August 2004 http://www.waterforlife.gov.ab.ca/docs/Final_Recommend_Online.pdf

water allocation restrictions and requirements

To achieve the broad objective of reducing or eliminating, on a case-by-case basis, the use of non-saline water, applicants must investigate the availability of alternative water supplies, prior to applying to develop a non-saline water source. Information from the investigation and other relevant data must be submitted to the Director with the application for non-saline water use.

The applicants must follow the specific requirements set out in the *Water Conservation and Allocation Guideline for Oilfield Injection (2006)*. Additional requirements or more stringent restrictions may apply on a site-specific basis.

operational policy

The following provisions apply to this Policy and are described in Part B of the *Water Conservation and Allocation Guideline for Oilfield Injection*.

1 GEOGRAPHIC AREA OF POLICY APPLICATION

This Policy will apply to all areas of the province under provincial jurisdiction.

The specific requirements of this Policy, and the provisions of the *Water Conservation and Allocation Guideline For Oilfield Injection (2006)*, may vary in some areas of the province, subject to the provisions of Water and Watershed Management Plans.

2 QUANTITY LIMITATIONS

Groundwater licences are restricted to a maximum of one-half of the long-term yield of a given aquifer in the immediate vicinity of the water source well.

Quantities of surface water available for licensing may be limited by requirements for conservation objectives, environmental flows, trans-boundary apportionment agreements, allocations granted to previous licences or other factors.

3 CUMULATIVE EFFECTS

Applicants must evaluate the combined effects of their proposed water use and other water diversions in the area.

4 WATER-SHORT AREAS

Applicants must maximize efforts to reduce or eliminate (on a case-by-case basis) non-saline water use in water-short areas of Alberta. Water-short areas occur where natural conditions and/or development pressures limit the availability of surface water and groundwater.

5 RISK-BASED ASSESSMENT

Applicants must assess environmental risks according to a three-tier classification system. This system will require an increased emphasis on water conservation and replacement of non-saline water sources in water-short areas.

6 TERMS OF THE LICENCE (NEW AND RENEWAL)

A licence is to be issued for a two-year period; upon review subsequent licence terms will be issued for a term of five years, if the Director allows the renewal.

7 RENEWAL APPLICATIONS

Licence holders must apply for renewal under section 59 of the *Water Act*. Allocations may be reduced in renewed licences.

8 WATER CONSERVATION INCENTIVES

Under some circumstances, projects that have demonstrated significant progress towards meeting *Water for Life* conservation goals in the previous five-year period may apply for licence renewal based on a simplified economic and environmental evaluation.

9 LICENCE CONDITIONS

Alberta Environment will include terms and conditions in the licence to satisfy the intent of the *Water Conservation and Allocation Policy for Oilfield Injection* and the *Water Act*.

10 ECONOMIC EVALUATION

An economic evaluation of alternatives is required for applicants to use non-saline water. Economic costs must be balanced against environmental impacts and the benefits of water conservation efforts. Although it is a general objective to achieve maximum water conservation without stranding oil and gas resources in Alberta, stranding may occur in some cases in water-short areas (e.g. where the natural ecosystem is at risk).

related policy and guideline documents

The following documents provide additional direction regarding Alberta Environment policy applicable to oilfield injection water use.

WATER FOR LIFE: ALBERTA'S STRATEGY FOR SUSTAINABILITY

Water for Life: Alberta's Strategy For Sustainability[3] defines three broad outcomes for managing our water resources:

- Reliable quality water supplies for a sustainable economy.
- Healthy aquatic ecosystems.
- Safe, secure drinking water supplies.

This policy is aligned with the overall goals and actions set out in *Water for Life*.

ADVISORY COMMITTEE ON WATER USE PRACTICE AND POLICY, FINAL REPORT (AUGUST 2004)

This policy adopts the recommendations of the *Advisory Committee on Water Use Practice and Policy (ACWUPP)*.

ACWUPP GUIDING PRINCIPLES FOR DECISIONS

The guiding principles and recommendations set out in the committee's final report provide specific directions to assist decision-making for individual applications (see Figure 1).

3 *Water for Life: Alberta's Strategy For Sustainability* is available at: www.waterforlife.gov.ab.ca.

Figure 1 : **Guiding Principles – Advisory Committee on Water Use Practice and Policy**

Water for Life Principles	Decisions about underground water injection should
All Albertans must recognize there are limits to the available water supply. Albertans must become leaders at using water more effectively and efficiently, and will use and reuse water wisely and responsibly.	Minimize the volume of non-saline water used for underground injection. Promote and support sustainable development practices. Allow transition times for affected sectors to avoid "economic shocks" and impractical technologies.
Citizens, communities, industry and government must share responsibility for water management in Alberta, and work together to improve conditions in their local watershed.	Respect the expectations of Albertans, who regard water as an important part of their heritage. Consider whether affected stakeholders and knowledgeable experts have been consulted and have had an opportunity to contribute their advice. Ensure fairness to all affected parties.
Knowledge of Alberta's water supply and quality is the foundation for effective decision-making.	Incorporate the best available knowledge and science, and note gaps or assumptions where improved information is needed. Recognize and build on past efforts.
Alberta must preserve the "first in time, first in right" principle for granting and administering water allocations, but water allocations will be transferable to ensure societal demands and needs can be met.	Create desirable outcomes for Albertans, including recognition of the benefits of industrial uses of water.
Healthy aquatic ecosystems are vital to a high quality of life for Albertans and must be preserved.	Consider both short-term and long-term effects on society and environment.
Groundwater and surface water quality must be preserved in pursuing economic and community development.	Minimize risks to human or environmental health by ensuring that monitoring and contingency response is in place for unpredictable future risks.

ACWUPP RECOMMENDED ACTIONS TO REDUCE NON-SALINE WATER USE

This policy focuses on implementation of the short-term recommendations of the **Advisory Committee on Water Use Practice and Policy**. The short-term, medium-term and long-term actions recommended by the committee are shown in Figure 2.

Recommended actions adopted by this policy include:

- Develop a new regulatory process (Water Conservation and Allocation Policy and Guideline) for use of non-saline water for oilfield (underground) injection.
- Categorize licences and applications within each watershed using three risk-based levels or Tiers (Tier 1 = low risk; Tier 2 = medium risk; Tier 3 = high risk).
- Review *Water Act* Licences to identify opportunities for reductions in water allocations.
- Develop a provincial Water Conservation Plan, including conservation targets established in the context of individual watersheds.
- Review progress in 2007 and determine if significant reduction of underground injection of non-saline water has occurred. Identify any further action required.

Figure 2: **Schedule to Reduce Use of Non-Saline Water for Underground Injection**

Short-Term In 1-3 years (2004-07)	**Medium-Term** In 4-7 years (2008-11)	**Long-Term** In 8-11 years (2012-15)
Step 1 Actions Initiate Reductions in Allocations and Use	**Step 2 Actions** Implement Efficiency/ Productivity Improvements	**Step 3 Actions** Achieve Conservation Targets Minimization/elimination
Develop a new regulatory process (Water Conservation and Allocation Policy and Guidelines "decision tree") for use of non-saline water for underground injection. Amend Alberta Energy and Utilities Board (EUB) documents and synchronize approval processes with Alberta Environment.	Evaluate review process and determine if regulatory changes or further policy development are required. Identify and implement reductions in use of non-saline water for uses other than conventional Enhanced Recovery by 2011 (e.g. salt cavern or deep well disposal uses).	Evaluate review process and determine if regulatory changes or further policy development are required.
Categorize licences and applications within each watershed using three risk-based levels or "tiers." Tier 1 = lower risk; Tier 2 = medium risk; Tier 3 = high risk.	Implement tier-specific targets for reduction or elimination of underground injection of non-saline water. (Reduce or eliminate underground injection of non-saline water in Tier 3 areas.)	Overall improvement in productivity and efficiency in Tiers 1 and 2. Further reduction or elimination of underground injection of non-saline water in Tier 3 areas.
Review *Water Act* licences to identify opportunities for reductions in water allocations and use and make the reductions: - term and new licences, - permanent licences.	Ongoing licence reviews and continued use of new Guideline.	Ongoing licence reviews and continued use of new Guideline.
Ensure water management plans currently under development address the use of non-saline water for underground injection.	Water management planning should be initiated for all remaining basins and must address the use of non-saline water for underground injection. Ensure future allocations will not create water deficits or conflicts in these areas.	Water management plans are developed for the entire province, each containing recommendations specific to underground injection activities.
Ensure underground injection is addressed in the provincial Water Conservation Plan (30% productivity and efficiency target proposed by *Water for Life*, subject to evaluation by sectors, Government of Alberta and Alberta Water Council using 2005 as the baseline year.	Implement *Water for Life* conservation plans: - Sectors to develop plans, - Alberta Water Council and Government of Alberta to review plans.	Achieve agreed upon target improvements in productivity and efficiency (by 2015) province-wide, all sectors.
Evaluate economic instruments to reduce the use of non-saline water for underground injection. Address situations where energy resources may become stranded.	Implement economic instruments and/or incentives where appropriate. Address situations where energy resources may become stranded.	Measure effectiveness of economic tools and improve where required. Resolve situations where energy resources have become stranded.
Improve Alberta's groundwater inventory. Develop and implement Water Use Reporting System, and public reporting system.	Continue to improve Alberta's groundwater inventory. Water Use Reporting System is operational. Public reporting system is operational.	Adequate groundwater information is available to support water management activities. Water use and public reporting systems used to verify achievements.
Increase research and development on alternative sources or recovery methods.	Continue industrial research and development.	Implement alternate technologies as appropriate including results of non-water research.
Alberta Environment to review progress in 2007 and evaluate whether or not significant reduction of underground injection of non-saline water has occurred. Identify any action required.	Review reduction and conservation targets and achievements in 2011 and identify any action required.	Review reduction and conservation targets and achievements in 2015 and identify any action required.

WATER CONSERVATION AND ALLOCATION GUIDELINE FOR OILFIELD INJECTION PURPOSES (2006)

This Guideline provides information regarding:

- Recommended water conservation practices for the design and operation of Enhanced Recovery projects. A thorough approach to water conservation is essential to the regulatory approval of enhanced recovery operations.
- Application requirements to obtain a *Water Act* licence for the use of non-saline water resources. Regulatory procedures and application steps are outlined in Part C of the Guideline.

The Guideline is a fundamental component of the regulatory framework for oilfield injection uses of non-saline water.

SUSTAINABLE RESOURCES ENVIRONMENTAL MANAGEMENT FRAMEWORK

Alberta's Commitment to Sustainable Resource and Environmental Management[4] (SREM) outlines the province's policy for protecting the environment while developing Alberta's natural resources.

This Policy supports the objectives of SREM, which includes specific outcomes, regulatory delivery mechanisms, reporting and monitoring requirements, and system evaluation components.

The systems approach adopted for environmental management of oilfield injection water use is described in Appendix D of the *Water Conservation and Allocation Guideline for Oilfield Injection.*

EUB DIRECTIVES

The Water Conservation and Allocation Guideline for Oilfield Injection Purposes lists EUB directives and guidelines that are relevant to oilfield injection and the approval of Enhanced Recovery Schemes (Appendix C). The EUB directives are applicable to the regulation of ER projects in addition to the requirements set out in this policy and the *Water Conservation and Allocation Guideline for Oilfield Injection.*

POLICY REVIEW

This policy replaces the *"Groundwater Allocation Policy for Oilfield Injection Purposes"* (March 1990).

This water conservation and allocation policy provides a consistent regulatory approach to achieve change, incorporating water conservation as a requirement for the approval of oilfield injection operations. The policy will be reviewed in 2007/2008 to measure progress in achieving *Water for Life* goals. The *Water Conservation and Allocation Guideline for Oilfield Injection* will be reviewed at that time and modified if necessary.

4 *Alberta's Commitment to Sustainable Resource and Environmental Management* is available at: www.gov.ab.ca/srd/info/sustainable.pdf

ENHANCED RECOVERY: A process in which a substance, often saline or non-saline water, is injected into oil reservoirs to increase and maintain the reservoir pressure so that more oil can be extracted. The two main types of enhanced oil recovery are water flooding, in which water is pumped into conventional oil field reservoirs, and injection of steam into heavy oil deposits. Enhanced oil recovery operations do not include oil sands mining operations.

OILFIELD INJECTION: The injection of non-saline or saline water, or non-water alternatives, for the purpose of maintaining or increasing the amount of recoverable hydrocarbon (one type of enhanced recovery method).

SALINE WATER: Water that has a total dissolved solids content exceeding 4,000 milligrams per litre (mg/L).

WATER ALLOCATION: The volume, rate and timing of diversion of water, as outlined in the *Water Act*.

Please refer to Appendix F of the *Water Conservation and Allocation Guideline for Oilfield Injection* for additional definitions.

Alberta

GLOSSARY

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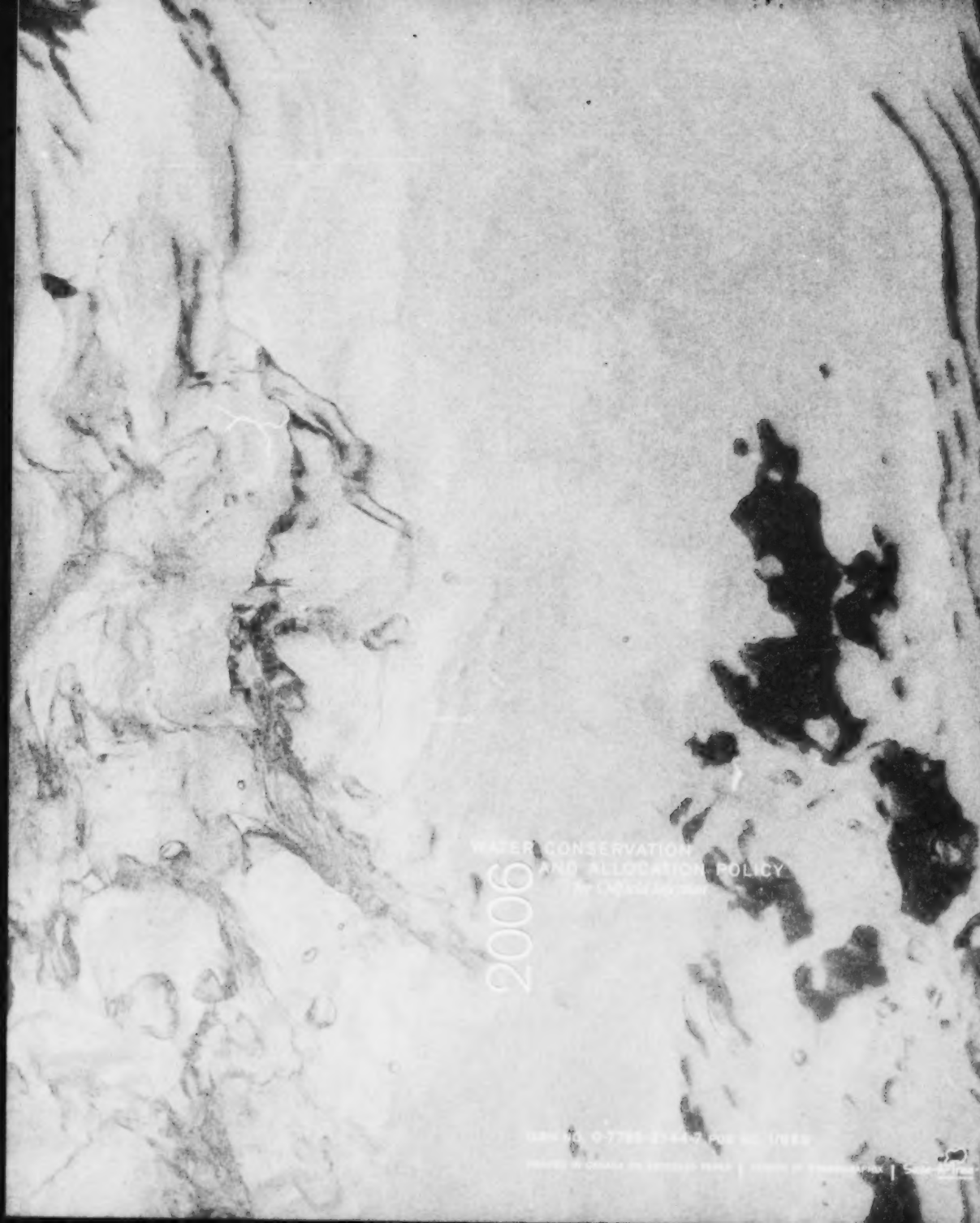
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